

PORTABLE HOMOGENIZER, SMOKING ACCESSORY PURSE, AND METHOD FOR
HOMOGENIZING

Background of the Invention:

5. Field of the Invention:

The invention relates to a homogenizer for grinding tobacco and other leaves and herbs. The homogenizer can be included in a smoking accessory purse. The invention also encompasses a method of homogenizing a tobacco product.

10 Description of the Related Art:

Tobacco and other leaves that are smoked grow to a size that is too large to smoke in a pipe or cigarette. To be smokeable, the leaves must be homogenized to a smaller size through shredding, cutting, pulverizing, or grinding. Once in
15 a smaller size, the pieces of leaf can be wrapped in a cigarette rolling paper or placed in a pipe for smoking.

Pre-ground tobacco can be purchased. This tobacco has a pre-selected particle size. Many of the smoking qualities of the tobacco are determined by the particle size. Because the
20 particle size of pre-ground tobacco is pre-selected by the manufacturer, the particle size may not match the preferences of the smoker.

Homogenizers such as blenders and coffee makers are known.

Prior art homogenizers place a blade at the bottom of a container. The product is added over the blade. The blade is then rotated and cuts the product to a particle size. The
5 term "particle size" stands for the average particle size of the pieces of leaf being homogenized. The resulting particle size is generally a factor of the speed of the blade. Higher blade speeds produce smaller particles.

For a single prior art homogenizer to produce different
10 particle sizes, the speed of the blade must be turned at different speeds. To control the blade speed, expensive electronic components must be added.

Prior art homogenizers and blenders are typically kitchen countertop appliances. Accordingly, these devices are sized
15 for use with large mixing bowls. In addition, kitchen appliance homogenizers and blenders in the prior art work by connecting via a cord to the household electrical outlet.

Prior-art kitchen homogenizers (i.e. U.S. Patent Nos. 4,480,926, 5,639,161, and 5,425,579) work by having a
20 propeller blade on or near the bottom of a closable vessel. The vessel is filled with a raw product to a level above the blade. When the motor is activated, the propeller blade creates a vortex within the vessel and the product is sheared

by the blade and the product is mixed. Due to the vortex action, the blade must be stopped to stop mixing to allow viewing and sizing of the contents. In addition, a complicated propeller blade is required to create a vortex. A
5 simple horizontal blade will not create a vortex that is required for mixing. Propellers are significantly more expensive than a horizontal blade.

In contrast to the kitchen type homogenizers, Johnson (U.S. 4,307,808) shows an apparatus for refining herbage. Johnson
10 pulverizes leaves by battering the leaves against a screen with metal balls. Johnson does not allow the particle size to be adjusted without changing the screen size. In addition, Johnson does not include a blade. Furthermore, Johnson pulverizes the leaves and does not cut them. By pulverizing
15 the leaves, the leaves may become damaged.

Summary of the Invention:

It is accordingly an object of the invention to provide a homogenizer for tobacco and other leaves and herbs that overcomes the above-mentioned disadvantages of the heretofore-
20 known devices and methods of this general type. With the foregoing and other objects in view there is provided, in accordance with the invention, a homogenizer including a cylinder for holding a product. The cylinder has a base and an axis. The axle in the cylinder is coaxial with the axis.

A blade connects to the axle. The blade is above the product when the cylinder is stationary and the blade contacts the product when the cylinder is axially reciprocated.

In accordance with another feature of the invention, the
5 homogenizer can include a cap covering an opening defined in the cylinder.

In accordance with another feature of the invention, the homogenizer includes a motor turning the axle.

In accordance with another feature of the invention, the
10 homogenizer includes a battery powering the motor. By being powered by a battery, the homogenizer is portable and can be used at any time, even away from an electrical outlet.

In accordance with another feature of the invention, the homogenizer includes a switch selectively powering the motor.
15 The switch interrupts the electrical current to the motor.

In accordance with another feature of the invention, the homogenizer is pocket-sized so it can be carried and used at any time when the user might want to smoke.

It is also an object of the invention to provide a smoking
20 system including a homogenizer as described above and a purse

or pouch holding the homogenizer. The purse can include a pocket for holding smoking accessories. These smoking accessories include but are not limited to a lighter and cigarette rolling papers.

- 5 In accordance with another feature of the invention, the smoking system can include a strap connected to the purse. The strap is used to secure the purse to a user.

It is also an object of the invention to provide a method of homogenizing products such as tobacco and other leaves for
10 smoking. The method is to be used in conjunction with the homogenizer described above. The method includes the following steps: inserting a product in the cylinder below the blade; turning the blade; and reciprocating axially the cylinder to move the product into contact with the blade.

- 15 In accordance with another feature of the invention, the method includes continuing the reciprocating until the product has a desired particle size. By using this method, the particle size of the product can be controlled by changing the length of time over which the cylinder is shook.

- 20 In the case of transparent cylinder, the particle size can be periodically viewed to determine the particle size.

In accordance with a further object of the invention, the blade is suspended above the bottom of the container. This allows the product to rest below the blade when the homogenizer is not being shaken. The particle size of the product can then be viewed. Furthermore, if the blade is flat (as opposed to being propeller like) no vortex is formed so the product will settle even when the blade is turning but the cylinder is not being shaken. In addition, the blade should be disposed higher than a *de minimis* amount above the bottom so as to allow a significant volume of the container to be filled with the product. Experiments have shown that placing the blade at at least one third of the height of the container (i.e., the distance from the base to the cap) from the base to allow sufficient product to be placed in the container while allowing enough room to shake the product into the blade. Furthermore, it has been shown that placing the blade at one half of the cylinder height is most preferable because it allows room for the product to be mixed by shaking while holding a sufficient amount of product.

In accordance with a further object of the invention, the grinder has holes in the bottom of the vessel. The holes are pre-sized to an optimal size for the product. The grinder is thereby shaken until the product has been ground to a point where it can pass through the holes. Furthermore, because the

product exits the vessel once it has been ground, it will not be "over ground" to too small of a particle size.

In embodiments with holes in the base, a second container can be added to catch the ground particles falling through the
5 holes. This second container should be removable from the base for example by unscrewing from the base.

In accordance with a further object of the invention, a mesh sleeve can be inserted in the container with the blade. The mesh size governs the ultimate size of the ground particles.
10 Preferably, the mesh takes the form of a mesh cylinder that encloses the blade and that screws into the base and abuts the cap of the container. The mesh can be used in conjunction with holes, where the ground product passes from the volume with the blade, through the mesh, and then through the holes
15 to a second container.

Other features that are considered as characteristic for the invention are set forth in the appended claims.

Although the invention is illustrated and described herein as embodied in a homogenizer, smoking system, and method of using
20 the homogenizer, it is nevertheless not intended to be limited to the details shown, since various modifications and structural changes may be made therein without departing from

the spirit of the invention and within the scope and range of equivalents of the claims.

The construction and method of operation of the invention, however, together with additional objects and advantages

5 thereof will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

Brief Description of the Drawings:

Fig. 1 is a front side view of a smoking system according to
10 the invention that includes a homogenizer;

Fig. 2 is a plan view of the smoking system;

Fig. 3 is a sectional view of the smoking system cut along line III shown in Fig. 2;

Fig. 4 is a perspective view of the smoking system;

15 Fig. 5 is a plan view of the homogenizer;

Fig. 6 is a cross-sectional view of the homogenizer cut along line VI as shown in Fig. 5;

Fig. 7 is a sectional view of a second embodiment of the homogenizer according to the invention that includes a second container; and

Fig. 8 is an exploded view of the homogenizer shown in Fig. 7.

5 Description of the Preferred Embodiments:

Referring now to the figures of the drawing in detail and first, particularly, to Fig. 1 thereof, there is seen a side view of a purse 10 containing a homogenizer 1.

Figs. 5 and 6 show the homogenizer 1 in greater detail. The homogenizer 1 includes a cylinder 2. The cylinder 2 has a base 3 and an axis 4. The cylinder 2 defines an opening opposite the base 3. A removable cap 6 (see Fig. 1) closes the cylinder 2. An axle 5 is placed through the base 3. The axle 5 is coaxial with the axis 4. A blade 7 is connected to the axle 5. The blade 7 is preferably perpendicular to the axle 5. The blade 7 is located above the base 3. Preferably, the blade is flat (as opposed to being propeller shaped). As shown in Fig. 7, a space is provided between the blade 7 and the base 3. This space can be filled with the product P. The product P is preferably tobacco.

Once the product P is inserted into the cylinder 2 below the blade, the cap 6 is attached to the cylinder 2 to seal the

cylinder 2. Next, the blade 7 is operated. The cylinder is then shaken axially to force the product P into contact with the moving blade 7. The blade 7 reduces to the particle size of the product P. Preferably, the cylinder 2 is transparent.

5 This allows the smoker to judge the particle size without removing the cap 6. To reduce the particle size of the product P, the cylinder 2 is shaken for a longer time.

As seen in Figs. 3 and 5, the homogenizer 1 can be connected to a motor 14. The motor 14 turns the axle 5, which in turn
10 rotates the blade 7. The motor 14 is preferably connected to a battery 13. By being battery powered, the homogenizer and smoking system can be used at any location. A switch 15 is inserted between the battery 13 and motor 14. The switch 15 selectively interrupts the current from the battery and
15 prevents the motor 14 from operating.

Figs. 1-5 show a purse 10 holding the homogenizer 1, motor 14, battery 13, and switch 15. Those and other related parts can be placed in a purse 10. The purse 10 includes a pocket 11. The pocket 11 can hold smoking accessories and the product P.
20 The purse 10 can also hold a lighter 12 and cigarette rolling papers 16. The purse 10 includes a cover 17 that closes the purse 10. The cover 17 prevents items from accidentally falling out of the purse 10. The purse 10 also includes a

strap 18. The strap 18 secures the purse to the smoker and can be placed around the smoker's neck.

Preferably, the smoking system is pocket sized. This allows the user to carry the smoking system to any location where
5 smoking might be allowed. In addition, by being pocket sized the smoking system is light enough that the cylinder can be easily reciprocated during grinding.

The blade 7 is preferably horizontal and has a sharp leading edge. As stated previously, the blade 7 shears the product P
10 when the cylinder 2 is shaken axially. Because the blade 7 is horizontal, the blade 7 does not create mixing in the cylinder 2. A horizontal blade contrasts prior-art bent blades that act like propellers to create a vortex and mixing.

An advantage of a horizontal blade is that they are
15 significantly cheaper to manufacture than propellers than must be shaped.

Because the horizontal blade does not create a vortex, the particle size of the product P can be monitored even though the blade 7 may be turning. As a result of the horizontal
20 blade, the method of using the homogenizer allows for the particle size to be checked while the blade is still operating or turning (i.e. coasting with the motor off).

As shown in Fig. 6, which is not drawn to scale, the height h of the blade 7 from the base 3 is more than a *de minimis* amount above the base 3. A *de minimis* height is defined as a height below which enough of the product P cannot be inserted to use the homogenizer 1 efficiently. A preferable height h is at least one third ($1/3$) of the distance d between the base and the cap 6. A most preferable height is where the height h equals one half ($1/2$) of the distance d . By placing the blade 7 near the middle of the cylinder 2 (i.e. $h > 1/3 d$ or $h = 1/3 d$), a significant amount of the product P can be inserted in the cylinder 2 beneath the blade 7 to use the homogenizer 1 sufficiently. In addition, by placing the blade 7 near the middle of the cylinder 2, the product P has enough room in the cylinder 2 to pass by the blade 7 when the cylinder is being shaken.

Figs. 7-8 show an alternate embodiment of the invention. As in the other embodiment, a horizontal blade 7 is disposed above a base 3 and supported by axle 5, which is turned by motor 14. In this embodiment, a container 52 is included to catch the homogenized product P. The container 52 is connected to the cylinder 2 by tubes 44 and 45. The tubes 44 and 45 have respective openings 43. By selecting the size of the openings 43 during manufacturing, the particle size of the product can be selected. Only when the product is ground enough to reduce the particle size to smaller than the

openings 43 may the processed product move to the container 52. Once in the container 52, the product P is separated from the blade 7 so it will not be unintentionally overprocessed to too small of a size. The tube connecting the opening 43 to the container 52 can either be an equal-sized tube 45 as the opening 43 or a larger tube 44. The larger tube 44 prevents clogging.

A mesh 33 can be included to filter the particle size. The mesh 33 is not required. The mesh forms a closed space within the cylinder 2 preferably by abutting the cap 6 and screwing into the base by a thread 33. The mesh has holes formed therein with a size equaling the desired particle size of the product. Raw, unrefined product is placed within the mesh. Then, the motor is turned on and the homogenizer is axially shaken to force the product to contact the blade 7. Once the particle size of the product is sufficiently reduced by the blade 7 it can pass through the mess 33. The refined product can then be collected in the cylinder 2 or in a container 52, if it is included.

To ease assembly and cleaning, the cylinder 2 and the container 52 can include threads 20 and 51, respectively, for screwing into the housing 60. Likewise, the container lid 54 screws onto a lid thread 53 on the container 52.